

REMARKS

Favorable reconsideration and withdrawal of the rejections and objections set forth in the above-mentioned Official Action in view of the foregoing amendments and the following remarks are respectfully requested.

Substance of a Personal Interview

Applicants' undersigned attorney acknowledges with appreciation the time and courtesies extended by Examiner Quana Grainger in granting and conducting a personal interview in the application. The Examiner provided an Interview Summary of the personal interview granted July 13, 2005, which was prepared and mailed subsequent to the interview. The Interview Summary concludes by noting that a formal written reply to the last Official Action must include the substance of the interview. Accordingly, the following comments are being provided.

Initially, it is noted that the Interview Summary refers to the July 13th, interview as being "telephonic". In fact, a personal interview was conducted at the United States Patent and Trademark Office on July 13, 2005. However, there was a subsequent brief telephone inquiry initiated by Applicants' undersigned attorney regarding the preparation and mailing of the Interview Summary.

The Interview Summary correctly notes that Yoshida and Sharpe were discussed. Yoshida was discussed in connection with the rejection of independent Claims 4 and 6 in the May 27, 2005, Official Action. In the rejection of Claims 4 and 6, the Examiner refers to "a developer carrying screw 6." At the personal interview, Applicants' undersigned attorney noted that element 6 shown in Figure 1 of Yoshida is a paddle wheel not a screw.

The Interview Summary indicates that Applicants argued with respect to Yoshida that a screw is not a “paddle.” In fact, Applicants’ undersigned attorney argued that a screw is not an equivalent structure of a “paddle wheel”.

In addition, it was noted that Claims 4 and 6 do not merely call for a screw, but rather a screw including a rotary shaft and a spiral blade, wherein the spiral blade is wound about the rotary shaft in a spiral form and has a carrying surface for carrying a developer.

It was further noted that Claims 4 and 6 call for a developer carrying screw which in cross-section in the longitudinal direction of the developer carrying screw has an inclination angle with respect to a rotation center line of the rotary shaft at the carrying surface which is smaller than an inclination angle with respect to a rotation center line at an opposite side of the carrying surface.

At the conclusion of the discussion of Yoshida, the Examiner indicated that she would conduct a further search of the art to support her position that the paddle wheel 6 shown in Yoshida is equivalent to the claimed screw recited in Claims 4 and 6.

Sharpe was discussed in connection with the rejection of independent Claim 15. Applicants’ undersigned attorney noted that Sharpe does not teach a screw that when viewed in cross-section in a longitudinal direction of the developer carrying screw includes surface portions having a plurality of different inclination angles with respect to rotation center line of the rotary shaft.

Applicants’ undersigned attorney also noted that Sharpe teaches a screw, i.e., auger 52, having different pitches for various portions 82, 86, and 88, not different inclination angles. The Examiner asserted that elements 90 of second portion 86 of the screw have a different inclination angle than an opposite surface of the screw to which the vanes are

attached. Applicants' undersigned attorney noted that the elements 90 are actually mixing vanes, which are not portious of the auger 52 and are provided to agitate the developer as opposed to being a carrying surface to transport the developer.

In Form PTO-892, which was attached to the Interview Summary, the Examiner lists five patents without comment. These patents will be discussed below.

This Amendment has been prepared in light of the helpful discussion held during the course of the personal interview.

Claim Status

Claims 4 through 11 and 15 through 24 remain pending in the application. Claims 4, 6, and 15 have been amended to even more succinctly define the invention and/or to improve their form. It is respectfully submitted that no new matter has been added.

Claims 4, 6, and 15 are the only independent claims pending in the application.

Art Rejections

Independent Claims 4 and 6

Claims 4 through 7, 11, and 24 are rejected under 35 U.S.C. § 102(b) as being anticipated by Japanese Patent Application No. 2002-278270 (Yoshida) for the reasons succinctly set forth in the Official Action.

Although not discussed at the personal interview, it is now noted that Yoshida has a publication date of September 27, 2002. The present application has a U.S. filing date of September 22, 2003. Accordingly, Yoshida is not prior art to the present application under Section 102(b). If the Examiner chooses to apply Yoshida in the next Office Action, she is kindly requested to indicate which section of the statute underlies the rejection.

Claims 15 and 16 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,204,721 (Sharpe) for the reasons succinctly set forth in the Official Action.

The rejections are respectfully traversed.

Response to Rejections of Claims 4 and 6

Amended Claim 4 recites a developing apparatus comprised of a developer carrying screw placed in parallel with a developer bearing member. The developer carrying screw includes a rotary shaft and a spiral blade, which is wound about the rotary shaft in a spiral form and has a carrying surface for carrying a developer. When viewing the developer carrying screw in cross section along a longitudinal direction, an inclination angle of the carrying surface with respect to a rotation centerline of the rotary shaft is smaller than the inclination angle at the opposite side of the carrying surface.

In the May 27th Official Action, the Examiner asserts that Yoshida discloses a developer carrying screw in parallel with a developer bearing member. The Examiner also asserts that Yoshida teaches an inclination angle of the carrying surface with respect to the rotation centerline that is different from the inclination angle of the opposite side of the carrying surface. It is respectfully submitted that screw 9 shown in Yoshida is distinguishable at least in position and function from the claimed screw. Further, the screw 9 as shown in Figure 3(a) of Yoshida is structurally distinguishable from the claimed screw.

Yoshida is not understood to disclose a developer bearing member in parallel with a developer carrying screw that is comprised of a spiral blade wound about a rotary shaft. Rather, as shown in Figure 1, Yoshida merely discloses a developer bearing member 3 in

parallel with a paddle wheel 6. The paddle wheel 6 is comprised of a plurality of paddles protruding radially outward from a wheel. The paddles are not spiral and are not wound about the wheel, and therefore, the paddle wheel 6 does not teach a screw with a spiral blade wound about a rotary shaft in a spiral form.

In the Form PTO-892 which was attached to the Interview Summary, the Examiner cites five patents to apparently support the proposition that a “paddle” can be referred to as a screw. Applicants’ undersigned attorney disagrees. For example, U.S. Patent No. 6,687,474 (Yamada et al.) mentions a “stirring device such as a paddle screw etc.” and a “complicated stirring and transferring mechanism using the paddle or the screw etc.” U.S. Patent No. 6,574,442 (Kibune) discloses a “paddle roller” and a “screw conveyor.” U.S. Patent No. 6,337,957 (Tamaki et al.) makes reference to “a stirring device such as a paddle screw.” U.S. Patent No. 5,614,994 (Kreiter) discloses a transport helix arranged on the circumference of a paddle roller and coupled to the web wheels to form a transport screw. Finally, U.S. Patent No. 5,963,766 (Okuno et al.) makes numerous references to screws, supply screws, collections screws, screw blades, and paddles.

Even assuming, *arguendo*, that the newly-cited patents could be properly combined with Yoshida in a Section 103 rejection, none of the patents accounts for the deficiencies of Yoshida, as discussed above. The additional patents cited by the Examiner do not show that the paddle wheel 6 in Yoshida comprises a spiral blade wound about a rotary shaft.

Furthermore, Yoshida is not understood to teach that when viewing a developer carrying screw in cross section along a longitudinal direction, an inclination angle with respect to a rotation centerline of the rotary shaft at the carrying surface is smaller than an inclination angle at the opposite side of the carrying surface. The Examiner appears to rely

on the bend in each of the plurality of paddles on the paddle wheel 6 in Yoshida as teaching different inclination angles. However, Yoshida does not provide a cross section view of the paddle wheel 6 in a longitudinal direction, and therefore does not disclose an inclination angle of the carrying surface as recited in amended Claim 4. In addition, none of the newly-cited patents discloses a cross section view of a screw in the longitudinal direction or a corresponding inclination angle with respect to the rotation centerline of the rotary shaft.

Yoshida discloses a screw 9, but it is not mentioned in the rejection of Claims 4 and 6. Like the paddle wheel 6, Yoshida does not provide a cross section view of screw 9 in a longitudinal direction, and therefore does not disclose an inclination angle of the carrying surface.

Applicants' undersigned attorney has obtained a Patent Abstract of Japanese document corresponding to Yoshida as well as, a computer-generated, English-language translation of Yoshida and has not identified anything in either document to support the Examiner's rejection of Claims 4 and 6 on Yoshida. Neither document describes the structure of screw 9 in any greater detail than can be discerned from studying the drawings. An Information Disclosure Statement is being filed concurrently herewith to make the Patent Abstract and the translation of record.

Amended Claim 6 also recites a developing apparatus comprised of a developer carrying screw placed in parallel with a developer bearing member. Similar to Claim 4, the developer carrying screw includes a rotary shaft and a spiral blade, which is wound about the rotary shaft in a spiral form and has a carrying surface for carrying a developer. When viewing the developer carrying screw in cross section along a longitudinal direction, the

carrying surface includes surface portions having a plurality of different inclination angles with respect to a rotation centerline of the rotary shaft. For the same reasons discussed above with respect to Claim 4, Yoshida does not disclose all of the features recited in Claim 6.

In view of the foregoing, it is respectfully submitted that Yoshida does not disclose features recited in amended Claims 4 and 6, and therefore does not anticipate the claimed invention.

Response to Rejection of Independent Claim 15

Amended independent Claim 15 also recites a developing apparatus comprised of a developer carrying screw placed in parallel with a developer bearing member. The developer carrying screw includes a rotary shaft and a plurality of spiral blades, each of which is wound about the rotary shaft in a spiral form and has a carrying surface for carrying a developer. When viewing the developer carrying screw in cross section along a longitudinal direction, an inclination angle of a carrying surface of one of the plurality of blades with respect to a rotation centerline of the rotary shaft is different from an inclination angle of a carrying surface of the other plurality of blades.

In the May 27th, Official Action, the Examiner asserts that Sharpe discloses a carrying screw comprising a plurality of blades. The Examiner also asserts that Sharpe teaches an inclination angle of a carrying surface of one of the plurality of blades with respect to the rotation centerline of the shaft that is different from the inclination angle of the carrying surface of the other blades.

It is respectfully submitted that Sharpe does not disclose or suggest the foregoing features recited in Claim 15. With reference to Figure 4, Sharpe merely discloses an auger

52 with a single blade, i.e. flight 82, wound about a rotary shaft 80. The flight 82 includes flight segments S1-S23. The segments are arranged in a first portion 84, a second portion 86, and a third portion 88. As discussed at column 7, lines 7 through 31 of Sharpe, the second portion 86 of the flight 82 contains the same flight 82 as the first and third portions 84, 88. The only difference is that the distance D2, i.e., the pitch, between each flight segment S8-S16 in the second portion 86 is greater than the distance D3 between each flight segment S17-S23 in the third portion 88. The distance D1 between each of flight segments S1-S7 is approximately equal to the distance D3. See especially, Column 7, lines 29 through 32. Thus, Sharpe is not understood to disclose a screw with a plurality of blades wound about a rotary shaft.

Furthermore, the plurality of mixing vanes 90 that are secured to the shaft 80 in the second portion 86 are not representative of the carrying surface of the flights. As shown in Figure 4 and discussed at column 7, lines 43 through 52 of Sharpe, the mixing vanes 90 are attached to the shaft 80 at certain locations. The mixing vanes 90 are not continuously wound about the shaft 80, and therefore are not part of the surface of a spiral blade. As a result, the mixing vanes 90 do not satisfy the claimed feature that the carrying surface of a blade has an inclination angle different from that of the other blades. Additionally, as discussed at column 7, lines 43 through 52 of Sharpe, the mixing vanes 90 serve to blend toner particles as opposed to acting as a carrying surface for the developer.

It is respectfully submitted that Sharpe does not disclose features of amended Claim 15 and therefore does not anticipate the claimed invention.

Dependent Claims

Claims 5, 7 through 11, and 16 through 24 depend either directly or indirectly from one of Claims 4, 6, and 15 and are allowable by virtue of their dependency and in their own right for further defining Applicants' invention. Individual consideration of the dependent claims is respectfully requested.

Closing Comments

It is respectfully submitted that all of the claims now on file are allowable over the art of record and that the application is in condition for allowance.

If there is any reason precluding the allowance of the application, the Examiner is kindly requested to contact Applicants' undersigned representative.

Favorable reconsideration, withdrawal of the rejections, and early passage to issue of the present application are earnestly solicited.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our New York office at the address shown below.

Respectfully submitted,



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